

REMARKS

The Official Action mailed 3 September 2008, has been received and its contents carefully noted. The pending claims, claims 1-5 and 9-11, were rejected. By this amendment, new claims 12-14 have been added. Support may be found in the specification and the claims as originally filed. No statutory new matter has been added. Therefore, reconsideration and entry of the claims as amended are respectfully requested.

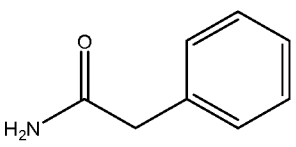
Rejection under 35 U.S.C. 103(a)

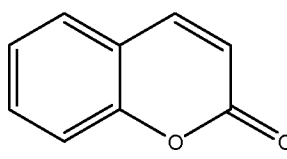
The Examiner maintained the rejection of claims 1-5 and 9-11 under 35 U.S.C. 103(a) as being unpatentable over Hayase (JP 04182461 A) in view of O'Mahony (US 6,034,121) and Fischer (US 6,906,007). In the Office Action, the Examiner stated that Applicants' prior response unpersuasive as he deemed that unexpected results should be filed in the form of a declaration.

Therefore, Applicants submit herewith an affidavit by Professor Long Lu. In the Affidavit, Professor Lu first explains that the compounds of the instant invention comprise a coumarin moiety and part of strobilurin and exhibit exceptional insecticidal and fungicidal activities. Professor Lu states that the present invention as set forth in the claims would not have been obvious to one of ordinary skill in the art in view of Hayase (D1), O'Mahony (D2), and Fischer (D3) as cited by the Examiner. Professor Lu states that the compounds of the present invention as claimed have significantly better antifungal activity than the compounds provided in Hayase. Because Hayase does not provide any supporting activity data for compound 51, Professor Lu states that a person of ordinary skill in the art could not be sure that a compound according to the present invention would exhibit good antifungal activity. In fact, Professor Lu states that the compounds of the instant invention exhibit exceptionally better fungicidal activities over compound 51. In particular, compound 51 provides just 20% control of fungus whereas the compounds of the instant invention exhibit 100% control of fungus at only 50 ppm. Professor Lu then explains that O'Mahony and Fischer do not provide any information such as activity data which one could then use to design a compound with the exceptional activities of the compounds of the present invention. Professor Lu then summarizes Hayase, O'Mahony and Fischer in combination do not suggest the features and activities of the claimed compounds.

Again, Applicants respectfully submit that with inventions involving new chemical compounds, it is necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie* obviousness of the new claimed compound. See *Takeda Chemical Industries, Ltd. v. Alphapharm Pty., Ltd.*, No. 06-1329 (Fed. Cir. 2007). Applicants respectfully submit that a *prima facie* case of obviousness of the claimed compound has not been established. Specifically, the Examiner does not provide any logical reasoning as to why one would select compound 51 of Hayase over the other 58 compounds exemplified in Hayase and then modify the compound 51 with specific substituents at specific locations to result in a compound of formula (I) as recited in the instant claims.

The compounds of Hayase are directed to phenylacetamide compounds. Thus, the primary

backbone of the compounds of Hayase is phenylacetamide, i.e. . Compound 51 of Hayase is the only compound among 58 other compounds which has coumarin

(i.e. benzopyranone,  as a substituent to result in the backbone of structural formula (I) of the claimed invention.

Hayase, however, does not disclose or suggest any bioactivity for compound 51. Thus, as supported by the Lu Affidavit, a person having ordinary skill in the art would not have reasonable expectation that compound 51 or derivatives thereof would exhibit insecticidal or fungicidal activity or even *any* bioactivity. Since one of ordinary skill in the art would not even know whether compound 51 would exhibit bioactivity or not, a person skilled in the art would not have looked to the cited patents, O'Mahony and Fisher to determine how to make compound 51 into a compound which has insecticidal or fungicidal properties with various substituents. This is also supported by the Lu Affidavit.

The Lu Affidavit also supports the argument that there is no motivation to modify compound 51 with any substituents such as those provided in O'Mahony and Fisher since Hayase does not provide any bioactivity data for compound 51. Thus, the requisite motivation to

combine Hayase with O'Mahony and Fisher to result in a compound having structural formula (I) is lacking and a *prima facie* case of obviousness has not been established.

Therefore, the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

Even the disclosures of Hayase, O'Mahony and Fisher were combined, one of ordinary skill in the art would not have been motivated to piece together the various compounds and functional groups with a reasonable likelihood of success in obtaining a compound having structural formula (I) which exhibits fungicidal and insecticidal activity.

As supported by the Lu Affidavit, O'Mahony does not provide any reasoning or evidence identifying particular substituents and locations in the compounds will result in fungicidal and insecticidal activity. Since the compounds of Fisher have no benzopyranone moiety, as stated by Professor Lu, one of ordinary skill in the art would expect that the compounds of Fisher and the claimed compounds would exhibit significantly different bioactivities despite having similar substituents. Thus, Applicants respectfully submit that even the combination of Hayase, O'Mahony and Fisher does not provide the requisite motivation for one of ordinary skill in the art to pick a particular backbone structure and particular substituents at particular places in the structure in order to arrive at the claimed compound.

Since the cited references provide no guidance as to how to modify the prior art compounds in order to obtain improved fungicidal and insecticidal activity, one of ordinary skill in the art would not have blindly cut and paste together the various parts of the prior art structures with a reasonable likelihood of success in obtaining the claimed compounds.

Therefore, the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

Unexpected Results

Applicants respectfully submit that the compounds of formula (I) as claimed provides unexpected results such that the claimed compounds are unobvious. Specifically, Hayase does not disclose or suggest any bioactivity for compound 51. O'Mahony discloses in a general way that substituents on coumarin rings may exhibit fungicidal properties, but O'Mahony does not teach or suggest which substituents over others will result in fungicidal properties. Fisher discloses some substituents on a particular dihydrophyrone backbone which results in some

fungicidal activity (only level 2 or more at 500 ppm).

The present inventors, through a significant amount of creative innovation and experimentation (including the molecule design and modification, synthesis of a significant number of compounds having similar structures, and screening biological activities), found that compounds having general formula (I) as claimed, not only have good fungicidal activity, but also have good insecticidal activity. Some of the compounds of the present invention were tested and compared with compound 51 of Hayase. The results provided on page 26, Table 3, of the Specification as follows:

Comparison of fungicidal activity against cucumber downy mildew (50 ppm)

Compound	1	2	5	6	12	26	37	52	402	405	409	414	JP51
control(%)	100	100	100	100	100	100	100	100	100	100	100	100	20

show that the compounds of the present invention exhibit significantly more fungicidal activity as compared with compound 51.

As stated by Professor Lu, nowhere do the cited references, alone or in combination, teach or suggest that compounds of the structural formula (I) as claimed will exhibit fungicidal and insecticidal activity that is significantly more than the activities of compounds known in the art.

Therefore, the claimed invention is unobvious and the rejection under 35 U.S.C. 103(a) should properly be withdrawn.

Applicants also respectfully submit that the cited references, alone or in combination, do not teach or suggest the compounds of claims 12-14 or their exceptional fungicidal and insecticidal activities. In particular, Applicants respectfully submit that the combination of the cited references do not result in the claimed invention as a whole. Specifically, nowhere do the cited references teach or suggest a benzopyrone compound according to the present invention wherein A is CH; B is O; R₁ and R₂ are methyl; R₃ is H; and R₄, R₅, R₆, R₇, and R₈ may be the same or different and are selected from the group consisting of H, halo, and C₁-C₆ alkyl.

Therefore, claims 12-14 are novel and unobvious.

Request for Interview

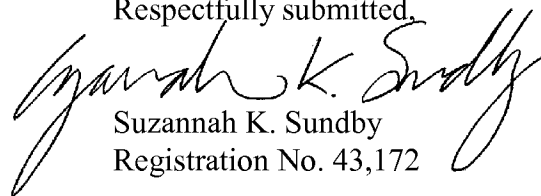
Applicants appreciate the Examiner taking the time to discuss the present invention over the telephone on 26 November 2008. Applicants also appreciate the Examiner's promise that he will contact the undersigned in order to arrange an interview prior to issuing another Office Action.

CONCLUSION

All of the stated grounds of objection and rejection have been properly traversed, accommodated, or rendered moot. Therefore, it is respectfully requested that the Examiner reconsider all presently outstanding objections and rejections and that they be withdrawn. It is believed that a full and complete response has been made to the outstanding Official action and, as such, the present application is in condition for allowance. If the Examiner believes, for any reason, that personal communication will expedite prosecution of this application, the Examiner is invited to telephone the undersigned at the number provided.

It is not believed that extensions of time are required, beyond those that may otherwise be provided for in accompanying documents. However, in the event that additional extensions of time are necessary to prevent abandonment of this application, then such extensions of time are hereby petitioned under 37 C.F.R. 1.136(a), and any fees required therefor are hereby authorized to be charged to **Deposit Account No. 02-4300**, Attorney Docket No. **034226.002**.

Respectfully submitted,



Suzannah K. Sundby
Registration No. 43,172

Date: 2 December 2008
SMITH, GAMBRELL & RUSSELL, LLP
1130 Connecticut Ave., NW, #1130
Washington, D.C. 20036
Telephone: (202) 263-4332
Fax: (202) 263-4352
ssundby@sgrlaw.com